TYPE SPECIMENS OF FOSSIL INVERTEBRATA IN THE LOS ANGELES COUNTY MUSEUM OF NATURAL HISTORY, EXCLUSIVE OF PALEOENTOMOLOGY

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Abstract: Type specimens of fossil Porifera, Coelenterata, Brachiopoda, Bryozoa, Mollusca, Arthropoda, and Echinodermata in the Los Angeles County Museum of Natural History are listed by the original published names. Paleoentomological types are not included. The original reference, the museum type number, the age, the formation, and the locality are given for each specimen. Figured specimens not of the holotype or paratype groups are included.

Introduction

This catalogue is published in compliance with Recommendation 72D of the International Commission on Zoological Nomenclature (1964, p. 75). It includes all the type and figured specimens, as defined below, of fossil invertebrates in the Los Angeles County Museum of Natural History, except for the paleoentomological types of W. D. Pierce and Georg Statz. A list of these will be published separately.

The catalogue is arranged systematically by phyla and classes. Within these, the genus and species group names, as originally published, are listed alphabetically. Each entry also contains the author and bibliographic reference for the lowest species-group name, the type category and number, the age assignment, the formation (if known), and the locality. We assign a separate number to every type specimen, unless it is not feasible to distinguish individuals, as in a rock containing many specimens, in which case the number refers to a lot. Figure references are included only if our specimen was figured. A question mark after the figure citation indicates some doubt that the figure was made from the specimen in our collections. "Missing" means that the specimen cannot now be found.

Definitions of type categories by Schenk, McMasters, Keen, and Muller (1956: 5-9) and the International Commission on Zoological Nomenclature (1964) are followed. In this list, hypotype refers to a specimen figured later than the original description of the species to which it is referred, or figured without a species designation. Casts of type specimens are classified like the originals from which they were made, with the prefix "plasto." Figured references for these refer to the original specimens.

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CATALOGUE

PORIFERA: HYALOSPONGEA

Chancelloria eros Walcott, 1920
MASON, 1935, p. 100, pl. 15, fig. 1.
Hypotype 1290; Cambrian, Cadiz Formation; Marble Mountains, San Bernardino County, California.

COELENTERATA: ANTHOZOA

Astrangia cf. *A. insignifica* Nomland, 1916
HERTLEIN and GRANT, 1960, p. 79, pl. 19, figs. 1-4, 7.
Hypotypes 1731 (figs. 1, 7), 1732 (figs. 2-4); Pliocene, San Diego Formation; hills south of Tia Juana River, San Diego County, California.

Balanophyllia elegans Verrill, 1864
HERTLEIN and GRANT, 1960, p. 84, pl. 19, figs. 14, 19-21; pl. 24, figs. 4, 5, 8, 13, 15-17.
Hypotypes 1738 (fig. 14), 1739 (fig. 19), 1740 (fig. 20), 1741 (fig. 21), 1742 (fig. 4), 1743 (fig. 5), 1744 (fig. 8), 1745 (fig. 13), 1746 (fig. 15), 1747 (fig. 16), 1748 (fig. 17); Pliocene, San Diego Formation; hills south of Tia Juana River, San Diego County, California.

Bergaueria sp.
ARAI and McGUGAN, 1969, p. 93, pl. 18.
Hypotype 1232 (fig. 1), 1233 (figs. 2, 7), 1234 (figs. 3, 6), 1235 (fig. 4), 1236 (fig. 5); Cambrian; near Goldfield, Esmeralda County, Nevada.

Dendrophyllia cf. *D. oldroydi* Faustino, *in* Oldroyd, 1925
HERTLEIN and GRANT, 1960, p. 82, pl. 19, figs. 5, 6, 15.
Hypotype 1737; Pliocene, San Diego Formation; hills south of Tia Juana River, San Diego County, California.

Paracyathus stearnsii Verrill, 1869
HERTLEIN and GRANT, 1960, p. 80, pl. 19, figs. 8-13.
Hypotypes 1733 (figs. 8, 9), 1734 (figs. 10, 11), 1735 (fig. 12), 1736 (fig. 13); Pliocene, San Diego Formation; hills south of Tia Juana River, San Diego County, California.

BRACHIOPODA: INARTICULATA

Glottidia albida (Hinds, 1844)
HERTLEIN and GRANT, 1960, p. 89, pl. 19, figs. 18, 24, 25.
Hypotypes 1749 (fig. 18), 1750 (fig. 24), 1751 (fig. 25); Pliocene, San Diego Formation; hills south of Tia Juana River (1749); quarry at end of Arroyo Drive, San Diego (1750, 1751), all San Diego County, California.

BRACHIOPODA: ARTICULATA

Laqueus californianus (Koch), *in* Kuster, 1844
HERTLEIN and GRANT, 1960, p. 96, pl. 20, figs. 1-3, 5-7.
Hypotypes 1753 (figs. 1-3), 1754 (figs. 5-7); Pliocene, San Diego Formation; quarry at end of Arroyo Drive, San Diego, San Diego County, California.

Laqueus vancouveriensis diegensis Hertlein and Grant
HERTLEIN and GRANT, 1960, p. 97, pl. 20, figs. 4, 8, 12.
Paratypes 1755 (figs. 4, 8, 12), 1756; Pliocene, San Diego Formation; end of Loring Street (1755), 0.2 miles north of Harbor Boulevard and Tourmaline Street (1756), both San Diego, San Diego County, California.

Orthis decipiens Phleger
PHLEGER, 1933, p. 17, pl. 1, fig. 2.
Holotype 1258; Ordovician, Barrel Spring Formation; Barrel Spring Canyon, Inyo County, California.

Orthis minusculus Phleger
PHLEGER, 1933, p. 7, pl. 2, figs. 6, 7.
Syntypes 1239 (fig. 6?), 1240 (fig. 7); Ordovician, Mazourka Formation; Mazourka Canyon, Inyo County, California.

Plectambonites angulatus Phleger
PHLEGER, 1933, p. 18, pl. 1, fig. 1.
Syntypes 1259 (fig. 1), 1260; Ordovician Barrel Spring Formation; Barrel Spring Canyon, Inyo County, California.

Plectorthis mazourkaensis Phleger
PHLEGER, 1933, p. 9, pl. 2, figs. 3-5.
Syntypes 1244 (fig. 3), 1245 (fig. 5), 1246, 1247 (fig. 4), 1248; Ordovician, Mazourka Formation; Mazourka Canyon, Inyo County, California.

Plectorthis patulus Phleger
PHLEGER, 1933, p. 10, pl. 2, figs. 1, 2.
Syntypes 1241 (fig. 1), 1242 (fig. 2), 1243; Ordovician, Mazourka Formation; Mazourka Canyon, Inyo County, California.

Terebratalia hemphilli Dall, 1902
HERTLEIN and GRANT, 1960, p. 93, pl. 19, fig. 26.
Hypotype 1752; Pliocene, San Diego Formation; end of Loring Street, San Diego, San Diego County, California.

BRYOZOA: GYMNOLAEMATA

Ceriocava eastoni Woollacott
WOOLLACOTT, 1966, p. 226, figs. la-lc.
Syntypes 1148; Cretaceous, Ladd Formation; Williams Canyon Road, 0.5 mile east of Santiago Canyon Road, Santa Ana Mountains, Orange County, California.

MOLLUSCA: PELECYPODA

Anatina (?) sp.
PACKARD, 1922, p. 423, pl. 31, fig. 5.
Plastohypotype 2425; Cretaceous; west side of Baker Creek, Orange County, California.

B.[*arbatia*] *Morsei* Gabb
GABB, 1864, p. 216, pl. 32, fig. 286.
Plastoholotype 2421; Cretaceous [Eocene]; San Diego, San Diego County, California.

Bornia cooki Willett
WILLETT, 1937b, p. 389, pl. 25, figs. 2, 3.
Holotype 1047; Pleistocene; Baldwin Hills, Los Angeles, Los Angeles County, California.

Cardita hilli Willett
WILLETT, 1944, p. 19, pl. 7.
Holotype 1067; Pleistocene, Palos Verdes Sand; Newport Bay mesa, Orange County, California.

Cardium (*Protocardium*) *marysvillensis* Dickerson, 1916
CLARK and WOODFORD, 1927, p. 94, pl. 15, fig. 12.
Plastoparatype 2433; Eocene, Meganos Formation; north side of Mt. Diablo, Contra Costa County, California.

Cardium sorrentoensis Hanna
HANNA, 1927, p. 285, pl. 41, fig. 10.
Plastoholotype 2430; Eocene, La Jolla Formation; east side of Rose Canyon, 2 miles east of La Jolla, San Diego County, California.

Chione picta Willett
WILLETT, 1944, p. 21, pl. 8, figs. B.
Paratypes 1068 (pl. 8, figs. B, destroyed, *see* SPHON, 1962, p. 57), 1954-1975, 2313-2414; Pleistocene, Palos Verdes Sand; Newport Bay mesa, Orange County, California.

Exputens llajasensis Clark
CLARK, 1934, p. 270, pl. 37, fig. 14.
Plastoparatype 2432; Eocene; branch of Llajas Canyon, Ventura County, California.

Leda rosa Hanna
HANNA, 1927, p. 271, pl. 25, fig. 9.
Plastoholotype 2428; Eocene, La Jolla Formation; Rose Creek, San Diego County, California.

Lucina packi Dickerson
DICKERSON, 1916, p. 484, pl. 36, fig. 12.
Plastoholotype 2422; Eocene; Parson's Peak, Fresno County, California.

Lucina packi Dickerson, 1916
TURNER, 1938, p. 52, pl. 9, fig. 11.
Plastohypotype 2423; Eocene; Simi Valley, Ventura County, California.

Nucula (*Acila*) *semirostrata* Grant and Gale
GRANT and GALE, 1931, p. 113.
Paratype 1976; Pliocene; 1¼ miles west of San Martinez Grande Canyon, boundary of Los Angeles and Ventura Counties, California.

Perna goniglensis Hanna
HANNA, 1927, p. 275, pl. 27, fig. 13 (?).
Plastoholotype 2429; Eocene, La Jolla Formation; sec. 12, La Jolla Quadrangle, San Diego County, California.

Rochefortia reyana Willett
WILLETT, 1937b, p. 388, pl. 25, figs. 1.
Syntypes 1046 (fig. 1, left), 1703 (fig. 1, right), 1704-1728; Pleistocene; Baldwin Hills, Los Angeles, Los Angeles County, California.

T.[*ellina*] *ooides* Gabb
GABB, 1864, p. 157, pl. 22, fig. 135.
Plastolectotype 2420; Cretaceous; west of Martinez, Contra Costa County, California.

Tellina santana Packard
PACKARD, 1922, p. 426, pl. 33, fig. 4.
Plastoholotype 2424; Cretaceous; crest of Santiago-Aliso divide, Orange County, California.

MOLLUSCA: GASTROPODA

Acmaea mitchelli Lipps
LIPPS, 1963, p. 3, figs. 2a-d, 3a-z, 3aa-kk, 4a-z, 4aa-kk.
Holotype 1126 (figs. 2a-d, 3a, 4a), paratypes 1127 (figs. 3b, 4b), 1781 (figs. 3c, 4c), 1782 (figs. 3d, 4d), 1783 (figs. 3e, 4e), 1784 (figs. 3f, 4f), 1785 (figs. 3g, 4g), 1786 (figs. 3h, 4h), 1787 (figs. 3i, 4i), 1788 (figs. 3j, 4j), 1789 (figs. 3k, 4k), 1790 (figs. 3*l*, 4*l*), 1791 (figs. 3m, 4m), 1792 (figs. 3n, 4n), 1793 (figs. 3o, 4o), 1794 (figs. 3p, 4p), 1795 (figs. 3q, 4q), 1796 (figs. 3r, 4r), 1797 (figs. 3s, 4s), 1798 (figs. 3t, 4t), 1799 (figs. 3u, 4u), 1800 (figs. 3v, 4v), 1801 (figs. 3w, 4w), 1802 (figs. 3x, 4x), 1803 (figs. 3y, 4y), 1804 (figs. 3z, 4z), 1805 (figs. 3aa, 4aa), 1806 (figs. 3bb, 4bb), 1807 (figs. 3cc, 4cc), 1808 (figs. 3dd, 4dd), 1809 (figs. 3ee, 4ee), 1810 (figs. 3ff, 4ff), 1811 (figs. 3gg, 4gg), 1812 (figs. 3hh, 4hh), 1813 (figs. 3ii, 4ii), 1814 (figs. 3jj, 4jj), 1815 (figs. 3kk, 4kk), 1816-1861; Pleistocene; San Nicolas Island, Ventura County, California.

Acteocina anomala Willett
WILLETT, 1945, p. 29.
Holotype 1082, paratypes 1083, 2179-2181; Pleistocene (?); near shore of Salton Sea, Imperial County, California.

Alabina effiae Willett
WILLETT, 1939, p. 202, pl. 54.
Holotype 1061 (pl. 54), paratypes 1729, 1730; Pleistocene, San Pedro Formation; Hilltop Quarry, San Pedro (holotype); Pleistocene, Timms Point Formation; Timms Point (paratypes), both Los Angeles County, California.

Architectonica llajasensis Sutherland
SUTHERLAND, 1966, p. 1, figs. 1, 2.
Holotype 1140; Eocene, Llajas Formation; Las Llajas Canyon, Santa Susana Mountains, Ventura County, California.

Balcis (*Balcis*) *tersa* Berry
BERRY, 1954, p. 261.
Paratype 2182; Pleistocene, Lomita Formation; Hilltop Quarry, San Pedro, Los Angeles County, California.

Balcis (*Vitreolina*) *ebriconus* Berry
BERRY, 1954, p. 265.
Paratype 2188; Pleistocene, Lomita Formation; Hilltop Quarry, San Pedro, Los Angeles County, California.

Balcis (*Vitreolina*) *incallida* Berry
BERRY, 1954, p. 264.
Paratypes 2186, 2187; Pleistocene, Lomita Formation; Hilltop Quarry, San Pedro, Los Angeles County, California.

Balcis (*Vitreolina*) *obstipa* Berry
BERRY, 1954, p. 262.
Paratypes 2183-2185; Pleistocene, Lomita Formation; Hilltop Quarry, San Pedro, Los Angeles County, California.

Boetica hertleini Kanakoff
KANAKOFF, 1966, p. 3, fig. 1.
Holotype 1145 (fig. 1), paratypes 1146, 2176-2178; Pliocene, Pico Formation; ½ mile south of Humphreys railroad station, Los Angeles County, California.

Calyptraea calabasasensis Nelson
NELSON, 1925, p. 419, pl. 54, figs. 8a, 8b.
Plastoholotype 2437; Eocene, Martinez Formation; Simi Hills, Ventura County, California.

Caly[*p*]*traea filosa* (Gabb, 1866)
CLARK, 1915, p. 560, pl. 65, figs. 23, 24.
Plastohypotype 2438; Miocene, San Pablo Group; Mt. Diablo quadrangle, Contra Costa County, California.

Chedvillia stewarti Clark
CLARK, 1942, p. 117, pl. 19, fig. 8.
Plastoparatype 2439; Eocene, Llajas Formation; Ventura County, California.

Diodora constantiae Kanakoff

KANAKOFF, 1953, p. 67, pls. 12, 13.

Holotype 1089 (pl. 12), paratypes 1094 (pl. 13, missing?), 2191-2312; Pleistocene, Palos Verdes Sand; Vermont Avenue, south of Sepulveda Boulevard, Wilmington, Los Angeles County, California.

Exilia taliaferroi Vokes

VOKES, 1939, p. 125, pl. 17, fig. 21.

Plastoholotype 2435; Eocene, Arroyo Hondo Formation; north side of Domengine Creek, Fresno County, California.

Fusinus (*Exilia*) *lincolnensis* (Weaver, 1916)

CLARK, 1918, p. 178, pl. 23, fig. 10.

Plastohypotype 2440; Oligocene, Kreyenhagen Shale; 15 miles north of Coalinga, Fresno County, California.

Fusinus ucalius Vokes

VOKES, 1939, p. 137, pl. 18, fig. 15.

Plastoholotype 2436; Eocene, Domengine Formation; first large canyon south of Big Tar Canyon, Kings County, California.

Homalopoma berryi McLean

McLEAN, 1964, p. 132, pl. 24, figs. 7-8.

Holotype 1138 (figs. 7-8), paratypes 1139, 1657-1702; Pleistocene, Timms Point Formation; Timms Point, Los Angeles County, California.

Kelletia vladimiri Kanakoff

KANAKOFF, 1954, p. 114, pls. 29-31.

Holotype 1097 (pl. 29), paratypes 1098 (pl. 30), 1099 (pl. 31); Pliocene, Pico Formation; ½ mile south of Humphreys railroad station, Los Angeles County, California.

Leptothyra subobsoleta Willett

WILLETT, 1937a, p. 63, pl. 25.

Holotype 1054; Pleistocene, Timms Point Silt; San Pedro, Los Angeles County, California.

Macrarene diegensis McLean

McLEAN, 1964, p. 131, pl. 24, figs. 9-14.

Holotype 1136 (figs. 9, 10), paratypes 1137 (fig. 11), 1300 (figs. 12-14)—1656; Pliocene, San Diego Formation; hills south of Tia Juana River, San Diego County, California.

Marginella jewettii nanella Oldroyd

OLDROYD, 1925, p. 24.

Paratypes 2152-2154; Pleistocene, San Pedro Formation; Nob Hill, San Pedro, Los Angeles County, California.

Mediargo mediocris (Dall, 1909)

TERRY, 1968, pl. 4, fig. 2.

Hypotype 1190; reworked Pliocene in Pleistocene Lomita Marl; Western Avenue cut, Palos Verdes Hills, Los Angeles County, California.

Megistostoma caminoensis Hanna

HANNA, 1927, p. 330, pl. 57, figs. 9, 10.

Plastoholotype 2431; Eocene, La Jolla Formation; 0.4 mile south of Sorrento Station, San Diego County, California.

Micrarionta (Xerarionta) agnesae Kanakoff

KANAKOFF, 1950, p. 85, pl. 27.

Holotype 1088 (pl. 27), paratypes 1864-1953; Pleistocene (?); China Point, San Clemente Island, Los Angeles County, California.

Mitromorpha galeana Berry

BERRY, 1941, p. 12.

Paratypes 2189, 2190; Pleistocene, Lomita Formation; Hilltop Quarry, San Pedro, Los Angeles County, California.

Nassarius (Caesia) fossatus forma *coiloterus* (Woodring), *in* Woodring, Bramlette, and Kew, 1946

ADDICOTT, 1965, p. 8, pl. 2, figs. 30, 31.

Hypotypes 1129 (fig. 30), 1130 (fig. 31); Pleistocene, Palos Verdes Sand; Playa del Rey, Los Angeles County, California.

Nassarius (Catilon) hildegardae Kanakoff, 1956

ADDICOTT, 1965, p. 16, pl. 3, figs. 11, 12.

Hypotypes 1131 (fig. 11), 1132 (fig. 12); Pliocene, Pico Formation (Towsley Formation); ½ mile south of Humphreys railroad station, Los Angeles County, California.

Nassarius hildegardae Kanakoff

KANAKOFF, 1956, p. 113, pl. 31.

Holotype 1110 (pl. 31), paratypes 2097-2151; Pliocene, Pico Formation; ½ mile south of Humphreys railroad station, Los Angeles County, California.

Nassarius stocki Kanakoff

KANAKOFF, 1956, p. 110, pl. 30A-C.

Holotype 1109 (pl. 30A, C), paratypes 1977 (pl. 30B)—2096; Pliocene, Pico Formation; ½ mile south of Humphreys railroad station, Los Angeles County, California.

Neadmete schwartzi Mount

MOUNT, 1970, p. 3, fig. 1.

Holotype 1779 (fig. 1), paratype 1780; Pliocene, Fernando Formation; Newport Bay mesa, Orange County, California.

Neadmete sutherlandi Kanakoff and McLean

KANAKOFF and M3LEAN, 1966, p. 4, figs. 1, 2.

Holotype 1150 (figs. 1, 2), paratypes 1151, 1862, 1863; Pleistocene, Lomita Marl; San Pedro, Los Angeles County, California.

Odostomia (Amaura) menzola Oldroyd

OLDROYD, 1925, p. 33.

Paratype 2173; Pleistocene, San Pedro Formation; Nob Hill, San Pedro, Los Angeles County, California.

Odostomia (*Amaura*) *timessa* Oldroyd
OLDROYD, 1925, p. 35.
Paratypes 2174, 2175; Pleistocene, San Pedro Formation; Nob Hill, San Pedro, Los Angeles County, California.

Odostomia (*Chrysallida*) *elsiae* Willett
WILLETT, 1948, p. 19, pl. 4, fig. 3.
Holotype 1071 (fig. 3), paratype 2415; Pleistocene, Palos Verdes Sand; Newport Bay mesa, Orange County, California.

Odostomia (*Evalea*) *manca* Oldroyd
OLDROYD, 1925, p. 32.
Paratypes 2170-2172; Pleistocene, San Pedro Formation; Nob Hill, San Pedro, Los Angeles County, California.

Odostomia (*Menestho*) *effiae* Willett
WILLETT, 1948, p. 19, pl. 4, fig. 4.
Holotype 1070 (fig. 4), paratypes 2416-2419; Pleistocene; Palos Verdes Sand; Newport Bay mesa, Orange County, California.

Surcula (*Surculites*) *andersoni* Dickerson
DICKERSON, 1914, p. 149, pl. 16, fig. 11.
Plastoholotype 2434; Eocene, Martinez Group; southeast of Muir Station, Contra Costa County, California.

Triphora fossilis Willett
WILLETT, 1937a, p. 62, pl. 24.
Holotype 1053; Pleistocene, Timms Point Silt; San Pedro, Los Angeles County, California.

Triphora kanakoffi Willett
WILLETT, 1948, p. 20, pl. 4, fig. 2.
Holotype 1072; Pleistocene, Palos Verdes Sand; Newport Bay mesa, Orange County, California.

Turbonilla (*Mormula*) *epiphanea* Oldroyd
OLDROYD, 1925, p. 28.
Paratype 2169; Pleistocene, San Pedro Formation; Nob Hill, San Pedro, Los Angeles County, California.

Turbonilla (*Pyrgolampros*) *collisella* Oldroyd
OLDROYD, 1925, p. 25.
Paratypes 2157, 2158; Pleistocene, San Pedro Formation; Nob Hill, San Pedro, Los Angeles County, California.

Turbonilla (*Pyrgolampros*) *idae* Oldroyd
OLDROYD, 1925, p. 26.
Paratypes 2159-2168; Pleistocene, San Pedro Formation; Nob Hill, San Pedro, Los Angeles County, California.

Turbonilla (*Strioturbonilla*) *pecora* Oldroyd
OLDROYD, 1925, p. 24.
Paratypes 2155, 2156; Pleistocene, San Pedro Formation; Nob Hill, San Pedro, Los Angeles County, California.

Turbonilla (*Turbonilla*) *grouardi* Willett
WILLETT, 1948, p. 17, pl. 4, fig. 1.
Holotype 1069; Pleistocene, Palos Verdes Sand; Newport Bay mesa, Orange County, California.

Turritella andersoni subsp. *lawsoni* Dickerson, 1916
MERRIAM, 1941, p. 77, pl. 12, fig. 4.
Plastohypotypes 2427; Eocene, Llajas Formation; Las Llajas Canyon, Simi Valley, Ventura County, California.

Turritella schencki Merriam
MERRIAM, 1941, p. 81, pl. 10, fig. 10.
Plastoholotype 2425 (fig. 10), plastoparatype 2426; Eocene, Tejon Formation; Tecuya Creek, Kern County, California.

ARTHROPODA: TRILOBITA

Acrocephalites ? trifossatus Mason
MASON, 1935, p. 102, pl. 15, figs. 2, 3.
Syntypes 1279 (fig. 2), 1280 (fig. 3); Cambrian, Cadiz Formation; Marble Mountains, San Bernardino County, California.

Alokistocare linnarssoni (Walcott, 1884)
MASON, 1935, p. 104, pl. 15, fig. 4.
Hypotype 1281; Cambrian, Cadiz Formation; Marble Mountains, San Bernardino County, California.

Amecephalus piochensis (Walcott, 1886)
MASON, 1935, p. 105, pl. 15, figs. 5-7.
Hypotypes 1282 (fig. 5), 1283 (fig. 6), 1284 (fig. 7?); Cambrian, Cadiz Formation; Marble Mountains, San Bernardino County, California.

Amecephalus strangulatus Mason
MASON, 1935, p. 106, pl. 15, figs. 8, 9.
Holotype 1285 (fig. 8), paratype 1286 (fig. 9); Cambrian, Cadiz Formation; Marble Mountains, San Bernardino County, California.

Anomocarella ? spatha Mason
MASON, 1935, p. 107, pl. 15, fig. 10.
Holotype 1287; Cambrian, Cadiz Formation; Marble Mountains, San Bernardino County, California.

Anoria lodensis (Clark, 1921)
MASON, 1935, p. 109, pl. 15, fig. 11.
Hypotype 1288 (fig. 11), 2442 (fig. 12, missing); Cambrian, Cadiz Formation; Marble Mountains, San Bernardino County, California.

Bathyuriscus howelli Walcott, 1886
MASON, 1935, p. 110, pl. 15, fig. 13.
Hypotype 1289; Cambrian, Cadiz Formation; Marble Mountains, San Bernardino County, California.

Bathyuriscus maximus Mason
MASON, 1935, p. 111, pl. 15, figs. 14-16.
Syntypes 1291 (fig. 14), 1292 (fig. 15), 1293 (fig. 16); Cambrian, Cadiz Formation; Marble Mountains, San Bernardino County, California.

Bumastus billingsi Raymond and Narraway
RAYMOND and NARRAWAY, 1908, p. 250, pl. 62, figs. 1, 2.
Plastoholotype 2441; Ordovician, Trenton Limestone; Hull, Quebec, Canada.

Ceraurus infrequens Phleger
PHLEGER, 1933, p. 15, pl. 2, fig. 12.
Holotype 1255; Ordovician, Mazourka Formation; Mazourka Canyon, Inyo County, California.

Corynexochus ? sp.
MASON, 1935, p. 113, pl. 15, fig. 17.
Hypotype 1294; Cambrian, Cadiz Formation; Marble Mountains, San Bernardino County, California.

Cybeloides calliteles Phleger
PHLEGER, 1933, p. 14, pl. 2, fig. 8.
Holotype 1254; Ordovician, Mazourka Formation; Mazourka Canyon, Inyo County, California.

Dorypyge quadriceps (Hall and Whitfield, 1877)
MASON, 1935, p. 116, pl. 15, figs. 18-22.
Hypotypes 1295 (fig. 18), 1296 (fig. 19), 1297 (fig. 20), 1298 (fig. 21), 1299 (fig. 22); Cambrian, Cadiz Formation; Marble Mountains, San Bernardino County, California.

Encrinurus hastula Phleger
PHLEGER, 1933, p. 12, pl. 2, figs. 13, 14.
Syntypes 1251 (fig. 13), 1252 (fig. 14); Ordovician, Mazourka Formation; Mazourka Canyon, Inyo County, California.

Encrinurus octonarius Phleger
PHLEGER, 1933, p. 13, pl. 2, fig. 9.
Holotype 1253; Ordovician, Mazourka Formation; Mazourka Canyon, Inyo County, California.

Isotelus gigas Dekay, 1824
PHLEGER, 1933, p. 3, pl. 1, figs. 5, 6.
Hypotypes 1277 (fig. 5), 1278 (fig. 6); Ordovician, Barrel Spring Formation; Barrel Spring Canyon, Inyo County, California.

Isotelus spurius Phleger
PHLEGER, 1933, p. 20, pl. 1, fig. 7.

Syntypes 1275 (fig. 7), 1276; Ordovician, Barrel Spring Formation; Barrel Spring Canyon, Inyo County, California.

Lloydia obsoletus Phleger

PHLEGER, 1933, p. 11, pl. 2, fig. 15.

Syntypes 1249 (fig. 15, left), 1250 (fig. 15, right); Ordovician, Mazourka Formation; Mazourka Canyon, Inyo County, California.

Pliomerops barrandei (Billings, 1865)

PHLEGER, 1933, p. 16, pl. 2, figs. 10, 11.

Hypotypes 1256 (fig. 10), 1257 (fig. 11); Ordovician, Mazourka Formation; Mazourka Canyon, Inyo County, California.

Remopleurides occidens Phleger

PHLEGER, 1933, p. 18, pl. 1, figs. 3, 4.

Syntypes 1261 (fig. 3?), 1262 (fig. 4), 1263-1274; Ordovician, Barrel Spring Formation; Barrel Spring Canyon, Inyo County, California.

ARTHROPODA: CRUSTACEA

Balanus gregarius (Conrad, 1856)

ZULLO, 1969, p. 6, figs. 3-7, 45.

Hypotypes 1197 (fig. 3, missing), 1198 (fig. 4, missing), 1199 (fig. 5), 1200 (fig. 6), 1201 (fig. 7, missing), 1202 (fig. 45); Pliocene, San Diego Formation; Market Street, east of Euclid Avenue, San Diego, San Diego County, California.

Balanus kanakoffi Zullo

ZULLO, 1969, p. 7, figs. 11-12, 15-17, 19-20, 22.

Holotype 1209 (fig. 19), paratypes 1205 (fig. 11), 1206 (fig. 12), 1207 (fig. 15), 1208 (figs. 16-17), 1210 (fig. 20), 1211 (fig. 22); Pliocene, San Diego Formation; hills south of Tia Juana River, San Diego County, California.

Balanus nubilus Darwin, 1854

ZULLO, 1969, p. 8, figs. 8-10.

Hypotype 1203 (figs. 8-9), 1204 (fig. 10); Pliocene, San Diego Formation; hills south of Tia Juana River, San Diego County, California.

Balanus proinus Woodring, *in* Woodring and Bramlette, 1950

ZULLO, 1969, p. 16, figs. 26-28, 30-32.

Hypotypes 1214 (figs. 26, 27), 1215 (fig. 28), 1216 (figs. 30-32); Pliocene, San Diego Formation; hills south of Tia Juana River, San Diego County, California.

Balanus sp., cf. *B. pacificus* Pilsbry, 1916

ZULLO, 1969, p. 10, figs. 23, 25.

Hypotypes 1212 (fig. 23), 1213 (fig. 25); Pliocene, San Diego Formation; hills south of Tia Juana River, San Diego County, California.

Balanus wilsoni Zullo

ZULLO, 1969, p. 10, figs. 33-34, 36, 38-39, 43-45.

Holotype 1224 (fig. 45), paratypes 1217 (fig. 33), 1218 (fig. 34), 1219 (fig. 36), 1220 (fig. 38), 1221 (fig. 39), 1222 (fig. 43), 1223 (fig. 44); Pleistocene (?), end of Loring Street (1222); Pliocene, San Diego Formation; Market Street, east of Euclid Avenue (1217-1221, 1223, 1224), both San Diego, San Diego County, California.

Cancer branneri Rathbun, 1926

MENZIES, 1951, p. 170, figs. 2a-2d.

Hypotypes 2448 (figs. 2a, 2b), 2449 (figs. 2c, 2d); Pleistocene, Timm's Point Formation; Timm's Point, Los Angeles County, California.

Cancer jordani Rathbun, 1900

MENZIES, 1951, p. 169, figs. 5a-5d.

Hypotypes 2446 (figs. 5a, 5b), 2447 (figs. 5c, 5d); Pleistocene; San Pedro, Los Angeles County, California.

Cancer productus Randall, 1839

MENZIES, 1951, p. 168, figs. 4a-4d.

Hypotypes 2444 (figs. 4a, 4b, missing), 2445 (figs. 4c, 4d, missing); Pleistocene, San Pedro Formation; San Pedro, Los Angeles County, California.

Cetolepas hertleini Zullo

ZULLO, 1969, p. 17, figs. 47, 49-50, 53, 55, 58-59, 61-63, 66, 68, 71-72.

Holotype 1230 (figs. 49, 61-62), paratypes 1225 (figs. 47, 59), 1226 (figs. 58, 71-72), 1227 (figs. 50, 63), 1228 (figs. 53, 66), 1229 (figs. 55, 68); Pliocene, San Diego Formation; hills south of Tia Juana River, San Diego County, California.

Coronula barbara Darwin, 1854 (?)

ZULLO, 1969, p. 21, figs. 73-75.

Hypotype 1231; Pliocene, San Diego Formation; hills south of Tia Juana River, San Diego County, California.

Lepas sp.

ZULLO, 1969, p. 4, figs. 1, 2.

Hypotype 1196; Pliocene, San Diego Formation; hills south of Tia Juana River, San Diego County, California.

ECHINODERMATA: STELLEROIDEA

Inyoaster bradleyi Phleger

PHLEGER, 1936, p. 82.

Paratypes 1237, 1238; Ordovician, Barrel Spring Formation; Barrel Spring Canyon, Inyo County, California.

ECHINODERMATA: ECHINOIDEA

Briaster townsendi woynari Hertlein and Grant

HERTLEIN and GRANT, 1960, p. 132, pl. 25, fig. 5; pl. 26, figs. 1-3.

Holotype 1778 (figs. 1-3), paratype 1777 (fig. 5); Pliocene, San Diego Formation; quarry at end of Arroyo Drive, San Diego, San Diego County, California.

Dendraster ashleyi (Arnold), *in* Arnold and Anderson, 1907

HERTLEIN and GRANT, 1960, p. 117, pl. 21, figs. 2, 6; pl. 22, fig. 1; pl. 26, fig. 9.

Hypotypes 1762 (fig. 2), 1763 (figs. 6, 9), 1764 (fig. 1); Euclid Avenue between Federal Boulevard and Home Avenue (1762, 1764); 2400 block of Euclid Avenue (1763), both San Diego, San Diego County, California.

Dendraster ashleyi ynezensis Kew, 1919

HERTLEIN and GRANT, 1960, p. 118, pl. 21, figs. 4, 5; pl. 22, fig. 2; pl. 26, fig. 7.

Hypotypes 1765 (fig. 4), 1766 (figs. 5, 7), 1767 (fig. 2); Pliocene, San Diego Formation; quarry at end of Arroyo Drive (1765); Market Street, ¼ mile south of Euclid Avenue (1766); 3550 Dove Street (1767), all San Diego, San Diego County, California.

Dendraster casseli Grant and Hertlein, 1938

HERTLEIN and GRANT, 1960, p. 120, pl. 22, fig. 7.

Hypotype 1768; Pliocene, San Diego Formation; quarry at end of Arroyo Drive, San Diego, San Diego County, California.

Encope tenuis Kew, 1914

HERTLEIN and GRANT, 1960, p. 126, pl. 23, figs. 7, 13; pl. 24, fig. 11.

Hypotype 1775; Pliocene, San Diego Formation; quarry at end of Arroyo Drive, San Diego, San Diego County, California.

Eucidaris cf. *E. thouarsii* (Valenciennes), *in* Agassiz and Desor, 1846

HERTLEIN and GRANT, 1960, p. 103, pl. 24, figs. 19-22.

Hypotypes 1757 (fig. 19), 1758 (fig. 20), 1759 (fig. 21), 1760 (fig. 22); Pliocene, San Diego Formation; hills south of Tia Juana River, San Diego County, California.

Lovenia hemphilli Israelsky, 1923

HERTLEIN and GRANT, 1960, p. 130, pl. 24, fig. 18.

Hypotype 1776; Pliocene, San Diego Formation; end of Loring Street, San Diego, San Diego County, California.

Mellita kanakoffi Durham

DURHAM, 1961, p. 5, pl. 2, fig. 2; text-fig. 1D.

Holotype 1121 (fig. 2, text-fig. 1D), paratype 1122 (missing); Pleistocene, Palos Verdes Sand; Newport Bay mesa, Orange County, California (1121); Lomita Boulevard and Main Street, Wilmington, Los Angeles County, California (1122).

Merriamaster cf. *M. israelskyi* (Jordan and Hertlein, 1926)

HERTLEIN and GRANT, 1960, p. 122, pl. 23, figs. 12, 14.

Hypotypes 1769 (fig. 12), 1770 (fig. 14); Pliocene, San Diego Formation; under Snyder Continuation School, San Diego, San Diego County, California.

Merriamaster pacificus (Kew, 1920)

HERTLEIN and GRANT, 1960, p. 124, pl. 23, figs. 2-4, 6, 11; pl. 25, fig. 6; pl. 26, fig. 11.

Hypotypes 1771 (pl. 23, figs. 2, 3, 11), 1772 (pl. 23, fig. 4), 1773 (pl. 23, fig. 6), 1774 (pl. 25, fig. 6; pl. 26, fig. 11); Pliocene, San Diego Formation; 0.2 mile north of Harbor Boulevard and Tourmaline Street (1771, 1772); end of Loring Street (1773, 1774), both San Diego, San Diego County, California.

Strongylocentrotus purpuratus (Stimpson, 1857)

HERTLEIN and GRANT, 1960, p. 112, pl. 19, fig. 29.

Hypotype 1761; Pliocene, San Diego Formation; Pacific Beach, San Diego, San Diego County, California.

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